

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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In re: Methyl Tertiary Butyl Ether ("MTBE")	:	Master File No. 1:00-1898
Products Liability Litigation	:	MDL No. 1358 (SAS)
	:	M21-88
	:	
This Document Relates To:	:	The Honorable Shira A. Scheindlin
<i>Orange County Water District v. Unocal</i>	:	
<i>Corporation, et al.</i> , Case No. 04 Civ. 4968	:	
(SAS).	:	
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**DECLARATION OF STEPHEN W. WHEATCRAFT, Ph.D.
IN SUPPORT OF PLAINTIFF'S OPPOSITION TO MOTION FOR
SUMMARY JUDGMENT**

DECLARATION OF STEPHEN W. WHEATCRAFT

I, Stephen W. Wheatcraft, hereby declare as follows:

1. As part of my work in this case I prepared a contaminant transport model based on the geological characteristics of the aquifer in Orange County as explained in my expert report in this case.
2. The contaminant transport model contains numerous data sets including but not limited to well pumping, water levels, recharge and flow direction. All information regarding the Talbert Gap and the seawater intrusion barrier was also included in the contaminant transport model. (See Wheatcraft Expert Report, June 23, 2011.)
3. The contaminant transport model was calibrated and a sensitivity analysis was done to ensure the model was functioning correctly.
4. A separate MTBE source term for each of the focus plume stations was added to the model at the location of the station. The source term for each focus plume station was calculated using actual data from MTBE detections in monitoring wells located at or associated with each individual focus plume station. The monitoring well data for each focus plume station was collected from station consultant reports or quarterly monitoring reports associated with the focus plume stations. The MTBE source term thus represents the MTBE released to groundwater from each individual focus plume station. The model thus depicts the transport of MTBE released at each focus plume station through the aquifer to production wells within the District's service area, although the model does not isolate each station. This concept is explained in detail in my expert report in sections 8, 10, 11 and 12.
5. The MTBE that originated from defendants' stations is migrating off site and mixing with other MTBE from nearby stations to form MTBE plumes. MTBE contamination will naturally migrate down gradient or toward production wells because of the influence that pumping wells have on the movement of water in an aquifer. The model shows that MTBE from each of the focus plume stations has contributed to at least one focus plume (see opinion #5 in my Summary of Opinions in my original report).
6. As the MTBE plumes migrate, they will intermix with each other in the subsurface of the aquifer. This migration may take years to tens of years.
7. The widespread releases of MTBE throughout the OCWD aquifer and the widespread areas of contamination in the subsurface are predicted by the model and are expected based on my knowledge of the OCWD aquifer system and the contaminant transport model. This MTBE contamination will converge in the subsurface. Section 13.2 Transport Model Results of my expert report reads:

“The MTBE transport model predicts that a total of 155 district production wells will be contaminated with MTBE above 5 ug/l within the next 50 years. It further predicts that 256 district production wells will be contaminated above 0.2 ug/l within the next 50 years.” and

“108 district production wells exceed 5.0 ug/l MTBE after 10 years”
8. When the model is run with the MTBE source terms from each individual focus plume station, the model predicts that MTBE will reach the following wells associated with Focus Plume numbers 1, 2, 3, 8 and 9:

Plume Number	Wells
1	NB-TAMD NB-TAMS HB-9 NB-DOLD NB-DOLS
2	MCWD-3B MCWD-5 MCWD-7 IRWD-13 IRWD-7 IRWD-11 MCWD-4
3	OCWD-M10 OCWD-M11 OCWD-M45
8	IRWD-1 IRWD-7 IRWD-11 SA-34
9	HB-13 HB-4 HB-7

Graphs showing the date and concentration of MTBE predicted in each of these wells are attached to my expert report as Appendix B and C.

9. OCWD has a manmade seawater intrusion barrier (the Talbert Gap). If left alone this gap would allow seawater to travel inland and fresh water to travel out to sea. OCWD controls this area with a series of seawater intrusion injection wells that prevent seawater from entering into the aquifer. This process also keeps fresh water and contamination from flowing out to sea.

10. Because OCWD is controlling the aquifer, the only exit for water from the aquifer is through production wells. OCWD's 2009 Groundwater Management Plan indicates that 98% of water in the aquifer will eventually exit to production wells. This is also verified by the mass balance of the contaminant transport model.

11. Given the facts above it is clear that the MTBE that has been released and migrated into the subsurface will keep migrating and converge in the subsurface. Portions of this plume will be pumped from the subsurface with normal operation of the wells for the next 50 years unless the contamination is removed before it reaches more wells. An alternative would be to place well head treatment on all 256 wells as needed for 50 years.

12. At the Beacon Bay Fountain Valley station, MTBE was detected in groundwater during the first testing for MTBE on 4/30/1996, at levels of 4,770 ppb in MW-3. In subsequent testing, MTBE was detected as levels as high as 115,000 ppb in MW-6. MTBE persists in groundwater for decades. Although monitoring well data from Beacon Bay Fountain Valley unequivocally shows MTBE in groundwater during these times and at these levels, the data is limited to the Beacon Bay site itself and does not indicate what has happened to the MTBE after it migrated off site. Under these circumstances the fate and transport modeling I conducted is the best method of determining the likely fate of the MTBE

that was detected in groundwater beneath the Beacon Bay site. That modeling shows that MTBE from the Beacon Bay station will contribute to an MTBE plume that will impact production wells within the district. To my knowledge, I am the only expert that has performed fate and transport modeling in this case.

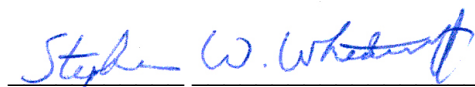
13. At the Unocal 5399 station, MTBE was detected in groundwater during the first testing for MTBE on 3/15/1996, at levels of 310 ppb in MW-1. In subsequent testing, MTBE was detected as levels as high as 2,000 ppb in MW-4. MTBE persists in groundwater for decades. Although monitoring well data from the Unocal 5399 station unequivocally shows MTBE in groundwater during these times and at these levels, the data is limited to the Unocal 5399 site itself and does not indicate what has happened to the MTBE after it migrated off site. Under these circumstances the fate and transport modeling I conducted is the best method of determining the likely fate of the MTBE that was detected in groundwater beneath the Unocal 5399 site. That modeling shows that MTBE from the Unocal 5399 station will contribute to an MTBE plume that will impact production wells within the district. To my knowledge, I am the only expert that has performed fate and transport modeling in this case.

14. At the Unocal 5123 station, MTBE was detected in groundwater during the first testing for MTBE on 2/29/1996, at levels of 32,000 ppb in MW-8. This was also the highest level of MTBE detected at this location. MTBE persists in groundwater for decades. Although monitoring well data from the Unocal 5123 station unequivocally shows MTBE in groundwater during these times and at these levels, the data does not indicate what has happened to the MTBE after it migrated off site. Under these circumstances the fate and transport modeling I conducted is the best method of determining the likely fate of the MTBE that was detected in groundwater beneath the Unocal 5123 site. That modeling shows that MTBE from the Unocal 5123 station will contribute to an MTBE plume that will impact production wells within the district. To my knowledge, I am the only expert that has performed fate and transport modeling in this case.

15. At the Thrifty 368 station, MTBE was detected in groundwater during the first testing for MTBE on 2/15/1996, at levels of 410 ppb in MW-6. In subsequent testing, MTBE was detected as levels as high as 10,000 ppb in MW-6. MTBE persists in groundwater for decades. Although monitoring well data from the Thrifty 368 station unequivocally shows MTBE in groundwater during these times and at these levels, the data is limited to the Thrifty 368 site itself and does not indicate what has happened to the MTBE after it migrated off site. Under these circumstances the fate and transport modeling I conducted is the best method of determining the likely fate of the MTBE that was detected in groundwater beneath the Thrifty 368 site. That modeling shows that MTBE from the Thrifty 368 station will contribute to an MTBE plume that will impact production wells within the district. To my knowledge, I am the only expert that has performed fate and transport modeling in this case.

I declare under penalty of perjury under the laws of the State of Nevada that the foregoing is true and correct.

Executed this 21st day of July, 2014, at Reno, Nevada.


Stephen W. Wheatcraft